RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERIC THOMAS GOHR,
NILES RICHARD ROSENQUIST,
RAJENDRA KASHINATH SINGH,
GREGORY JAMES STODDARD,
SHAHRZAD ZARKOOB
and JOHANNES MARTINUS DINA GOOSSENS

Appeal 2007-0951
Application 10/740,074
Technology Center 1700

Oral Hearing Held: May 9, 2007

Before CATHERINE Q. TIMM, JEFFREY T. SMITH, and
LINDA M. GAUDETTE,
Administrative Patent Judges

On Behalf of the Appellant:

DAVID E. RODRIGUES, PhD (via telephone)
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The above-entitled matter came on for hearing on Wednesday, May 9, 2007, commencing at 9:07 a.m. at the U.S. Patent and Trademark Office, 600 Dulany Street, 9th Floor, Alexandria, Virginia.

CLERK: Appeal No. 07-0951.

(Mr. Rodriques was connected telephonically.)

JUDGE TIMM: We have a court reporter here, and we have Judge Timm, Judge Smith, and Judge Gaudette.

MR. RODRIGUES: Good morning, Your Honor.

JUDGE SMITH: Good morning.

JUDGE GAUDETTE: Good morning.

JUDGE TIMM: Good morning. And you have 20 minutes to present your argument. You can assume that we have read the case and understand the issues, and you can begin with your dispositive issues.

MR. RODRIGUES: All right. We shall begin.

The invention is directed to a flame-retardant material containing polycarbonate and analogous species of the potassium perfluorobutane sulfonate family and cyclic siloxane.

We were granted a method patent No. 6730720 some time ago, directed to polycarbonate containing potassium perfluorobutane sulfonate and cyclic siloxane. The other species of the same genus were not allowed because the examiner saw in one of the references that potassium diphenyl disulfonate, which does not belong to the same homologous species, actually did not produce flame-retardant properties.

We took the claims as allowed then, but subsequently filed a continuation in part for other species of the potassium perfluoroalkane sulfonate family. The examiner did not allow that.

Our contention is essentially that because of the presence of a fluorinated group in the species, there's a synergy between the cyclic siloxane and the perfluoroalkane family, resin and polycarbonate, that provides this particular invention with advantageous haze and a better element index, which is much the best.

The examiner has alleged that -- two things. One, there is motivation to combine because an organopolysiloxane, as taught by Mark, would help reduce the amount of viscosity of the composition; that's the motivation for making this combination. And the second factor that he stated was that we would get improved impact-resistant properties as a result of the teachings in Ogoe 479, and these improved impact-resistant properties would also result from making a concentrate.

Our client did the experiments which you will see in appendix -- the attached appendices to dispel this notion. In particular, pertaining to the examiner's contention that the additional cyclic siloxane improves net viscosity, I would like to refer you to Rosenquist, U.S. patent No. 6353046, where in column 5 of table 1C he adds .05 weight percent of cyclic siloxane and .07 weight percent of the potassium perfluorobutane sulfonate species. And you can see the melt flow is 15.8.

I would also like to refer you to table 1D on the next page of this particular application. And he's added there, as you can see, a larger amount of cyclic siloxane. He's doubled the content of cyclic siloxane to .1 weight percent. So you have a 100 percent increase in cyclic siloxane. And you will see that the melt flow is the same.

So the examiner's contention that the addition of cyclic siloxane changes the melt viscosity advantageously is inaccurate. The quantities added here in order to get the respective flame retardancy and haze are so small that the addition of one quantity in the slightly larger amount is often offset by the addition of the other quantities in a slightly larger amount as well. All right. So that is wrong.

Next, I would like to take you to appendix B on our declaration A. (Audio blip) as well as the cyclic siloxane doesn't produce any consistent trend in impact resistance. If you look at the table 1 on appendix B, declaration A, you will see that the NOX amount doesn't change by a whole amount in the standard deviation, actually, of the different quantities mentioned in table 1.

Similarly, table 2 shows where he added different perfluorobutane sulfonate. You can see that when you add potassium perfluorobutane sulfonate alone, the NOX increases. However, when you add -- if you look back at table 1, when you add the cyclic siloxane, you can see that there's no particular trend at all there.

So the examiner's contention on both points -- one, that the cyclic siloxane is added to improve melt viscosity is wrong, as is his contention that the cyclic siloxane is added to improve impact, as mention by Ogoe 479, is wrong. All right?

JUDGE TIMM: Well, now, does the reference --

MR. RODRIGUES: We therefore request you --

JUDGE TIMM: Counselor --

MR. RODRIGUES: -- that it also is wrong for not combining some of the references that he has mentioned.

JUDGE TIMM: Counselor, can I interject a question?

MR. RODRIGUES: Certainly.

JUDGE TIMM: I'm wondering, while the examiner says that this siloxane improves these properties, do the references the examiner rely upon say that the siloxane improves these properties?

MR. RODRIGUES: Yes. The reference mark does say that the cyclic siloxane is added to reduce melt viscosity during blending. It does say that. But the reference only teaches the addition of cyclic siloxane to polycarbonate.

Here, we have an additional compound thrown in, the additional compound being the potassium perfluoroalkane sulfonate salt. And once this salt is added in, the mix is entirely different. You don't see the same trends that Mark teaches. So his contention that melt viscosity is reduced is inaccurate.

JUDGE TIMM: So that it's -- once you add this salt --

MR. RODRIGUES: Yes.

JUDGE TIMM: -- you no longer get the properties that the reference is telling you're getting?

MR. RODRIGUES: That's exactly correct, both in terms of -- are not sized out as relevant in terms of melt viscosity.

JUDGE TIMM: Well, the question then is: Would one of ordinary skill in the art understand that you wouldn't get those properties with the addition of the siloxane?

MR. RODRIGUES: Yes. I believe, knowing polymer processing, that you would not get those properties because you're adding a salt into the mix now. The salt dissolves at higher temperatures than melt. It could cause a different behavior in the polycarbonate resin in terms of bulk of the material.

So one with skill in the art would not have anticipated that the addition of the salt would essentially change the mix from what Mark teaches. And one of skill would know that, rather.

JUDGE TIMM: And did you test all the concentrations of the siloxane that are suggested by the reference?

MR. RODRIGUES: Yes. Yes, we did. We tested that and I believe a little more, too. Generally, if you look at the examples in the reference, the examples on page 10, all right, you'll see that he threw in .1 weight percent in table example 1 and 2. In preparation, we tested up to .2

weight percent. So we went to twice that amount. You're adding very small quantities here because you want them to have transparency. All right?

So we added twice that amount, and you can see both at the amount, at .1 weight percent, and at .2 weight percent, you have no particular trend in the melt viscosity.

JUDGE GAUDETTE: What is your response to the examiner's comment that in Ogoe 280 --

MR. RODRIGUES: 280. Let's talk about Ogoe 280. Ogoe 280 doesn't teach master batching in the sense that we mean it. We talk about pelletizing the master batch. Okay? Pelletizing the master batch in --

JUDGE GAUDETTE: Yes. But let me take -- excuse me. Let me take you to claim 24. There is -- if you look at claim 24 --

MR. RODRIGUES: That doesn't have pelletizing the master batch.

JUDGE GAUDETTE: Correct. So why don't you talk about that claim in connection with Ogoe 280.

MR. RODRIGUES: Okay. Ogoe 280 in the first case teaches, I believe, a granular blend of different materials. Okay? In order to make a concentrate, one with ordinary skill in the art in polymer processing would understand that concentrate implies melting the material to make it. And --

JUDGE GAUDETTE: Well, how would one of ordinary skill in the art understand that? Does it state that in your specification?

MR. RODRIGUES: Yes, it does state that, that making a concentrate implies passing it through an extruder.

JUDGE GAUDETTE: Okay.

MR. RODRIGUES: Okay? So you pass it through an extruder, and that's the only way that you can make a concentrate, as one with ordinary skill in the art would understand it. All right? You then pelletize it because it comes out through the extruder, and upon pelletizing it, you then reblend it with additional polycarbonate and cyclic siloxane to form a fire-resistant polycarbonate composition.

Ogoe 280 just teaches a granular blend. He teaches mixing it, and then he teaches passing it through an extruder a second time. On the second pass you actually get a composition. But his composition, his second pass, would equal our first pass, our first step.

But although 280 teaches producing in a second step that would equal the composition produced in our first step, he doesn't teach a second step of blending the concentrate with additional polycarbonate polymer and additional cyclic siloxane or salt.

JUDGE GAUDETTE: Well, he does say that the master batch is then combined with another polycarbonate.

MR. RODRIGUES: I understand that. But that's what I'm trying to say, that his master batch is not equal to our master batch. His is a granular blend of the melt blend.

JUDGE GAUDETTE: But yours just says a concentrate, and I'm trying to find where a concentrate is limited.

MR. RODRIGUES: Yes. The way a batch is defined, okay, let me take you to -- hang on a second. If you look at our example, if you look at paragraph 0022 --

JUDGE GAUDETTE: I'm sorry, what page was that? Paragraph 22?

MR. RODRIGUES: Paragraph 22. The material is put in an extruder, and that's where you make your concentrate. You must blend it to make your concentrate.

JUDGE GAUDETTE: But that's just an example.

MR. RODRIGUES: Right.

JUDGE GAUDETTE: Well, so that doesn't tell me that one of ordinary skill in the art always understands a concentrate is made by extrusion.

MR. RODRIGUES: True. But if you did not put this material in an extruder, you would not be able to disperse the salt in the manner that one of ordinary skill in the art would expect. The salt would just not dissolve. It would not blend. It wouldn't melt. Nothing would happen to it.

If you did what Ogoe 280 does, which is he just mixes it in a sort of a Waring blender, you would never be able to disperse the salt quite in the manner that we want, and you would never be able to get the haze that

we want. You can look at Rosenquist and the OGOE reference that I spoke about --

JUDGE GAUDETTE: Well, do you have any --

MR. RODRIGUES: -- US 6353046. So you can also look at our comparative examples.

JUDGE GAUDETTE: Well, do you have a comparative example showing OGOE's process?

MR. RODRIGUES: There are lots of examples showing OGOE's, but showing both master batching and non-master batching. I look at what OGOE 280 teaches as being non-master batch. He doesn't make a concentrate in the way that we mean concentrate.

JUDGE TIMM: So you're arguing that your use of that word "concentrate" is different --

MR. RODRIGUES: Than blending, yes. You have to disperse the salt to such an extent that it produces improved haze. You make a dissolved composition of the salt in the polycarbonate. The salt particles are no longer visible, and one would do light scattering, for example.

JUDGE TIMM: Do you have a definition of "concentrate" in your specification that would support limiting that word to that particular meaning?

MR. RODRIGUES: Let me see. Look in paragraph 0006 on page 2. It says, "Not wishing to be bound by any theory, it is believed that the present method of using the flame retardant polycarbonate concentrate

AIDS in completely dissolving the salt into the final polycarbonate composition." Although it doesn't disclose that at all -- yes, although it doesn't dissolve in that first step.

JUDGE TIMM: It doesn't dissolve. But is your claim required? Is it limited to dissolving?

MR. RODRIGUES: I guess not. But one with ordinary skill in the art would know, therefore, that if you did it, if you didn't dissolve it, you wouldn't get the kind of haze that we show in our results. That would never happen.

JUDGE SMITH: Excuse me. This is Judge Smith. Have you shown that the different methods of mixing, when you say you're saying you-pelletize then further mix with a polycarbonate, versus the mixing method of OGOE 0280 --

MR. RODRIGUES: We don't exactly have that example. But we have something that's a step up from OGOE 278, where the material was actually added without -- and master batched without concentrating it versus concentrating it in examples 1 and 2. Okay?

JUDGE SMITH: Okay.

MR. RODRIGUES: If you look at example 2, we did exactly what we claimed. If you looked at example 1, we put it through an extruder just in much the same way that OGOE does it. It was first mixed, okay, and then put through an extruder. So example 1 represents a one-step process. Example 2 represents the two-step process we've claimed. All right?

And if you look at the results, we got haze at 3.2 millimeters. And generally, the thicker the sample gets, the greater the reduction in haze. You can see that when you have a 3.2-millimeter-thick sample, the last three rows at the bottom, you can see that when you make it by the method of OGOE represented by example 1, you have a 1.6 haze, a haze at 1.6; versus in example 2, when you master batch it then put it a second time, it's .7.

So there's a reduction of over 50 percent when you do it the way we do it where you make the concentrate and you just put it all together. You mix it in some other device and then put it through the extruder one time.

JUDGE SMITH: Looking at your claim 1, you're talking about a method of reducing haze.

MR. RODRIGUES: Yes.

JUDGE SMITH: Do you have a baseline that you're working from?

MR. RODRIGUES: You can see that we reduced -- if you look at the examples in table 1 rather than table 2 of the instant application, there's a tremendous reduction in haze if you do make a concentrate.

JUDGE SMITH: And it's your position that if you combine the teachings of the OGOE reference with Umeda, as proposed by the examiner, you wouldn't see some reduction in haze?

MR. RODRIGUES: No, you wouldn't. First of all, Umeda doesn't even teach -- Umeda and OGOE 280 don't even teach the cyclic siloxane that we claimed. So it doesn't teach all the elements that we claimed.

JUDGE GAUDETTE: I'm sorry. But in claim 24, you don't claim a specific cyclic siloxane.

MR. RODRIGUES: Right. But neither Umeda nor OGOE 280 even teaches cyclic siloxane. They just teach an organopolysiloxane. One of them teaches an organofibro-carbinosiloxane. We don't require that, either.

But anyway, to get back to your point, my contention is no, you would not. If you combined OGOE 280 with Umeda, you would not -- you would get what we get in Exhibit 1, not what we get in Exhibit 2.

JUDGE SMITH: I have another question. Regarding for this haze reduction, what is your control that you're basing this up?

MR. RODRIGUES: The control is the example 1 and example 2, where you do exactly what the combination of Umeda and Ogoe 280 teaches. You mix the stuff in a blender and then you push it through the extruder once. Okay?

In example 2, you actually pelletize it, then re-put it through the extruder with extra polycarbonate and the cyclic siloxane. So the control is example 1 and example 3. All right?

JUDGE SMITH: Wait a minute. Let me rephrase the question.

MR. RODRIGUES: Sure.

JUDGE SMITH: In your specification, evidently you have a standard that you're determining that has increased haze. Where is --

MR. RODRIGUES: The standard is example 1.

JUDGE SMITH: The standard is example 1?

MR. RODRIGUES: Yes. And example 3. Those are the comparative examples. And as we've indicated, if you look at table 1 on page 10 and table 2 on page 12, we've indicated that those are competitive examples. One was done in a small laptop extruder, and the table 1 and table 2 was done in a production scale extruder. So it works at all levels.

JUDGE SMITH: Okay.

MR. RODRIGUES: So in summary, I think that the examiner's contention that the reduction in melt viscosity by the addition of a cyclic siloxane and the improvement in notched Izod do not happen for the reasons he cited. They actually do not take place because the addition of extra compound, which is the salt, to the compositions actually change the balance of properties, and you don't get the reduction in melt viscosity that he thought you would get. Neither do you get the improvement in notched Izod that you would get.

What you do have is a synergy between the fluorinated groups of the flame retardant salt and the cyclic siloxane when thrown in the polycarbonate to have tremendously improved haze, which in all cases is an improvement of over 50 percent, and an improvement in the element index,

which is very important for polycarbonates because you want it to be transparent. And you do get a very high flame retardancy as well, we view as allegedly calling to UL-94, the test, Underwriters Laboratory, UL-94.

JUDGE TIMM: I think we understand your position. Do you have any more questions, Judge Gaudette?

JUDGE GAUDETTE: No.

JUDGE TIMM: Judge Smith?

JUDGE SMITH: No.

JUDGE TIMM: Unless you have any closing remark, I think that concludes the hearing.

MR. RODRIGUES: Thank you very much.

(Whereupon, at 9:28 a.m., the appeal was concluded.)